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Hertel et al.

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(54) **UNIVERSAL TRACK DERAILER ASSEMBLY**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 259 days.

This patent is subject to a terminal disclaimer.

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Related U.S. Application Data

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(60) Provisional application No. 62/559,248, filed on Sep. 15, 2017.

(51) **Int. Cl.**
B61K 5/06 (2006.01)

(52) **U.S. Cl.**
CPC ***B61K 5/06*** (2013.01)

(58) **Field of Classification Search**
CPC B61K 5/00; B61K 5/04; B61K 5/06
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,829,246	A	4/1958	Hayes	
3,517,186	A	6/1970	Hayes	
6,105,906	A	8/2000	Pease et al.	
6,202,564	B1	3/2001	Hart et al.	
7,549,611	B2	6/2009	Hertel	
7,909,293	B2	3/2011	Pease	
8,262,033	B2	9/2012	Pease	
11,001,280	B2 *	5/2021	Hertel	B61K 5/06

OTHER PUBLICATIONS

Jul. 29, 2020—U.S. Non-Final Office Action—U.S. Appl. No. 16/131,421.

* cited by examiner

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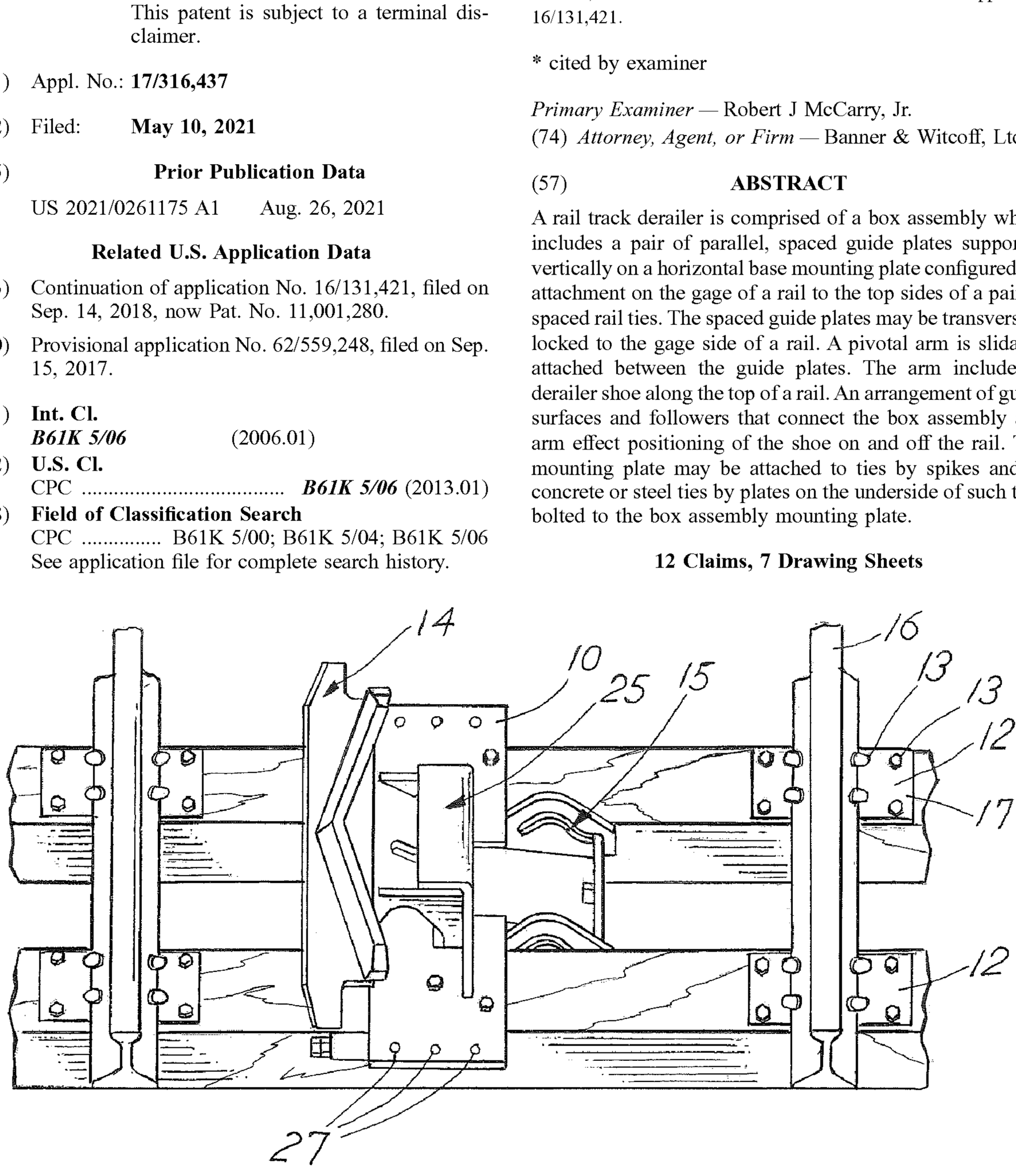
(57) **ABSTRACT**

A rail track derailer is comprised of a box assembly which includes a pair of parallel, spaced guide plates supported vertically on a horizontal base mounting plate configured for attachment on the gage of a rail to the top sides of a pair of spaced rail ties. The spaced guide plates may be transversely locked to the gage side of a rail. A pivotal arm is slidably attached between the guide plates. The arm includes a derailer shoe along the top of a rail. An arrangement of guide surfaces and followers that connect the box assembly and arm effect positioning of the shoe on and off the rail. The mounting plate may be attached to ties by spikes and to concrete or steel ties by plates on the underside of such toes bolted to the box assembly mounting plate.

12 Claims, 7 Drawing Sheets



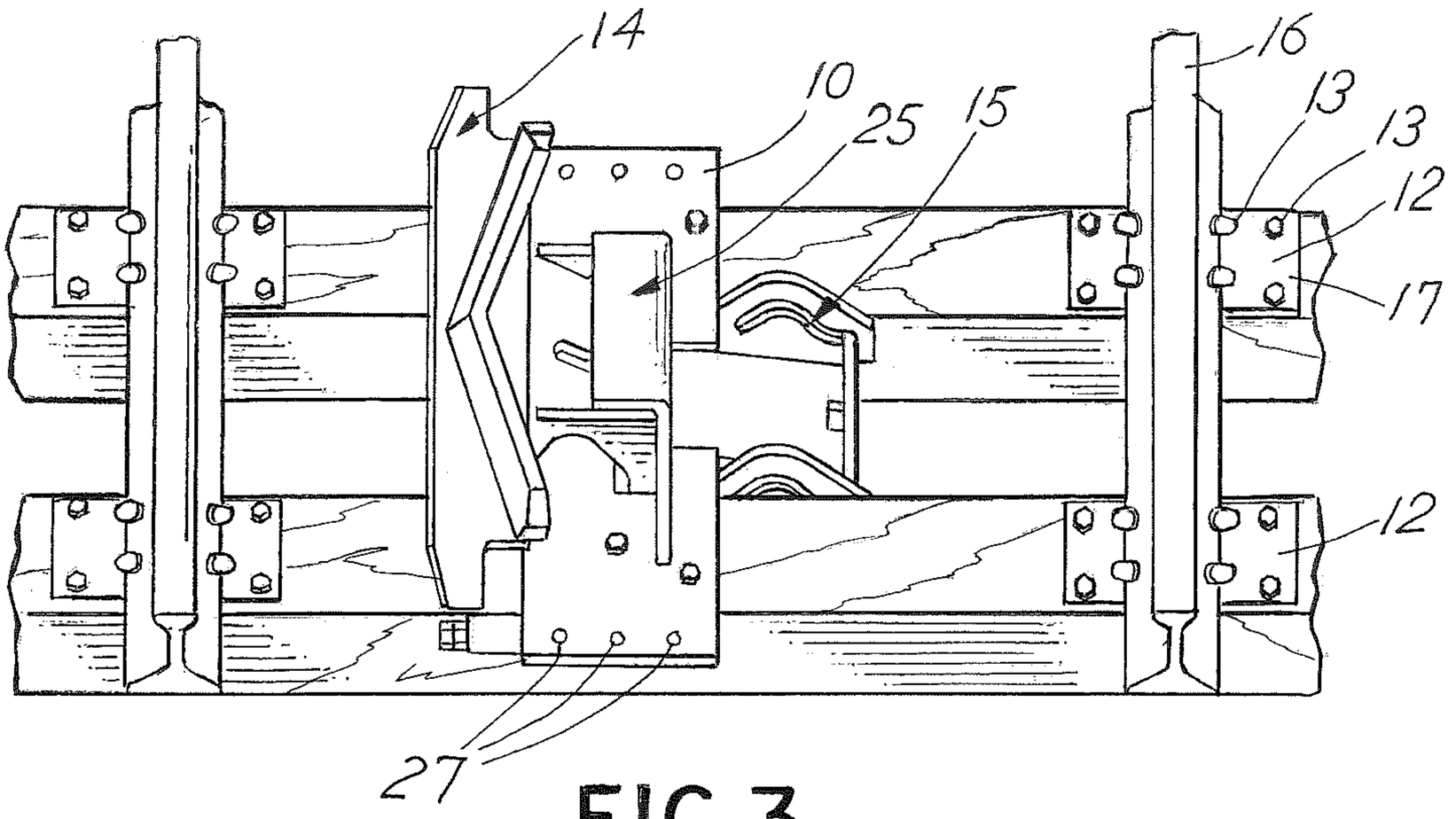


FIG. 3

FIG. 2

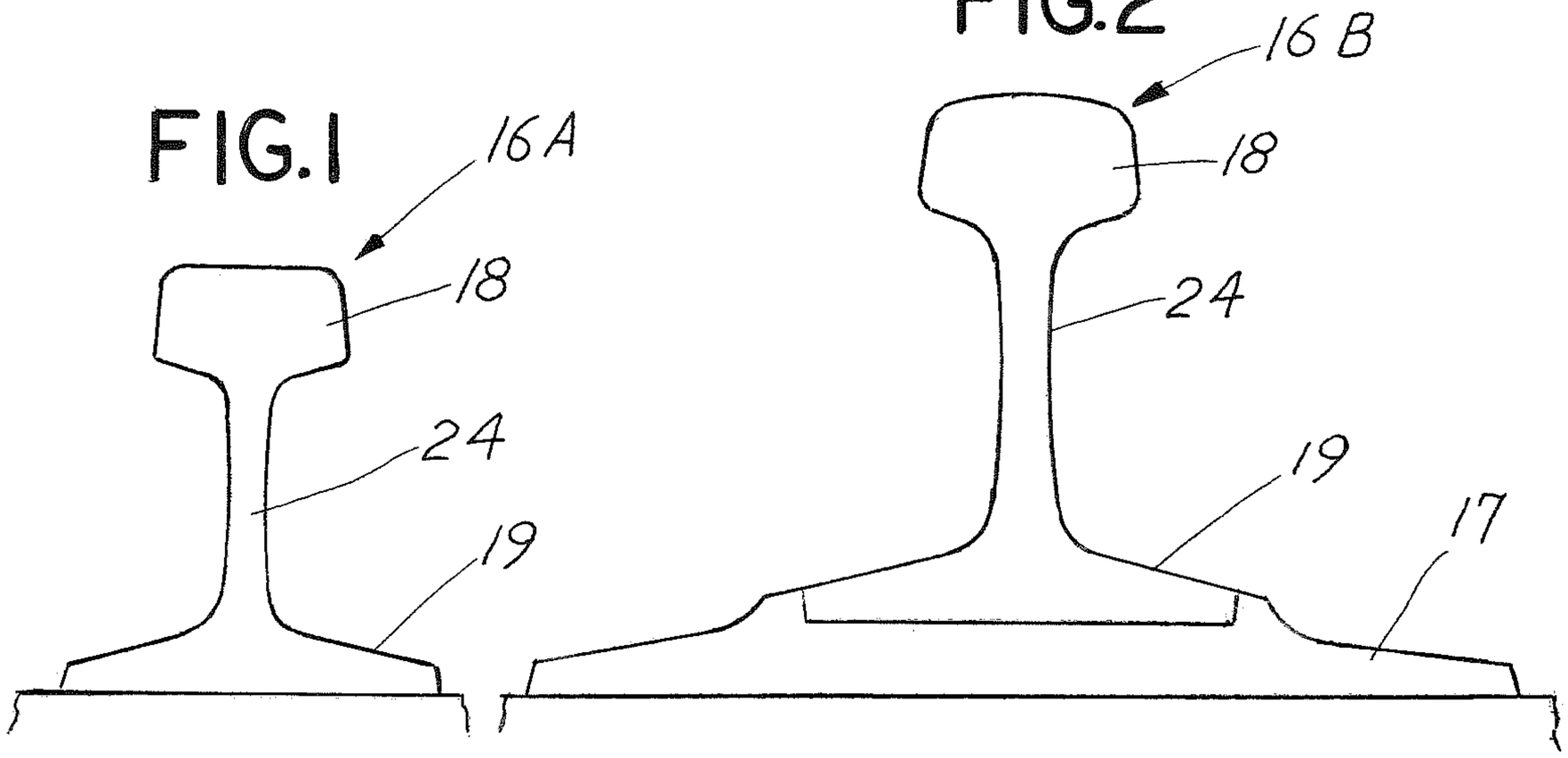


FIG. 1

FIG.4

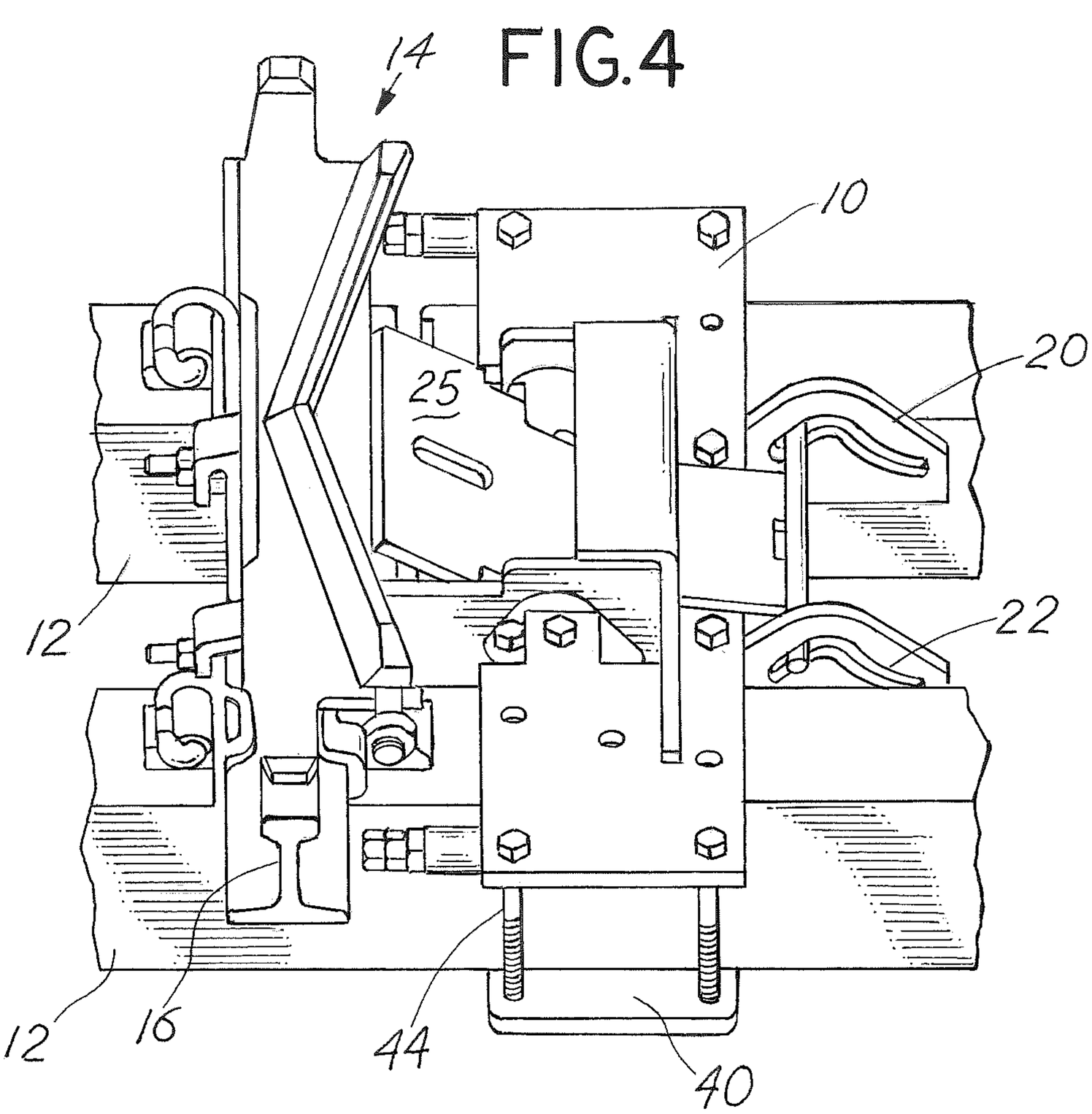
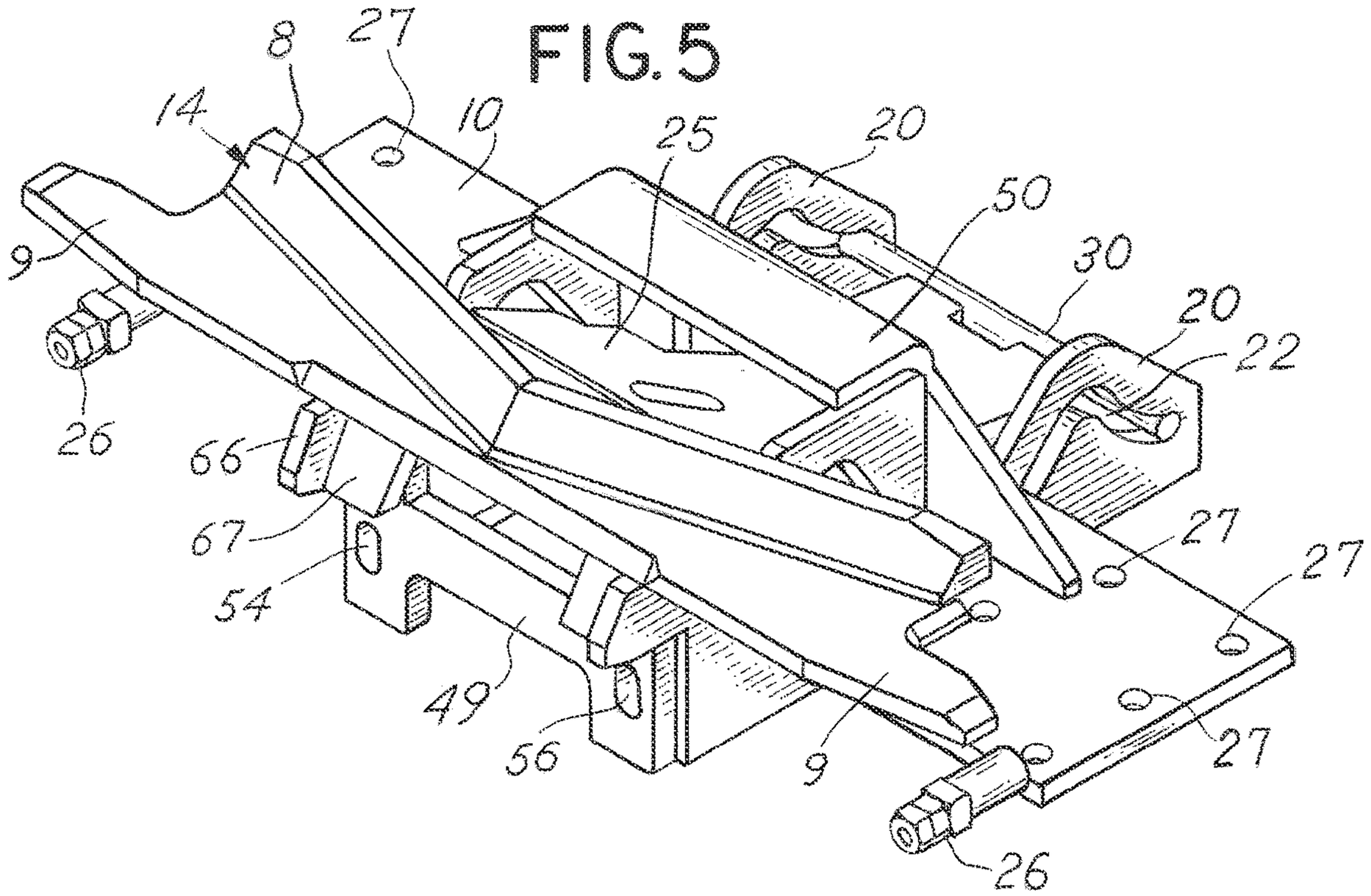


FIG.5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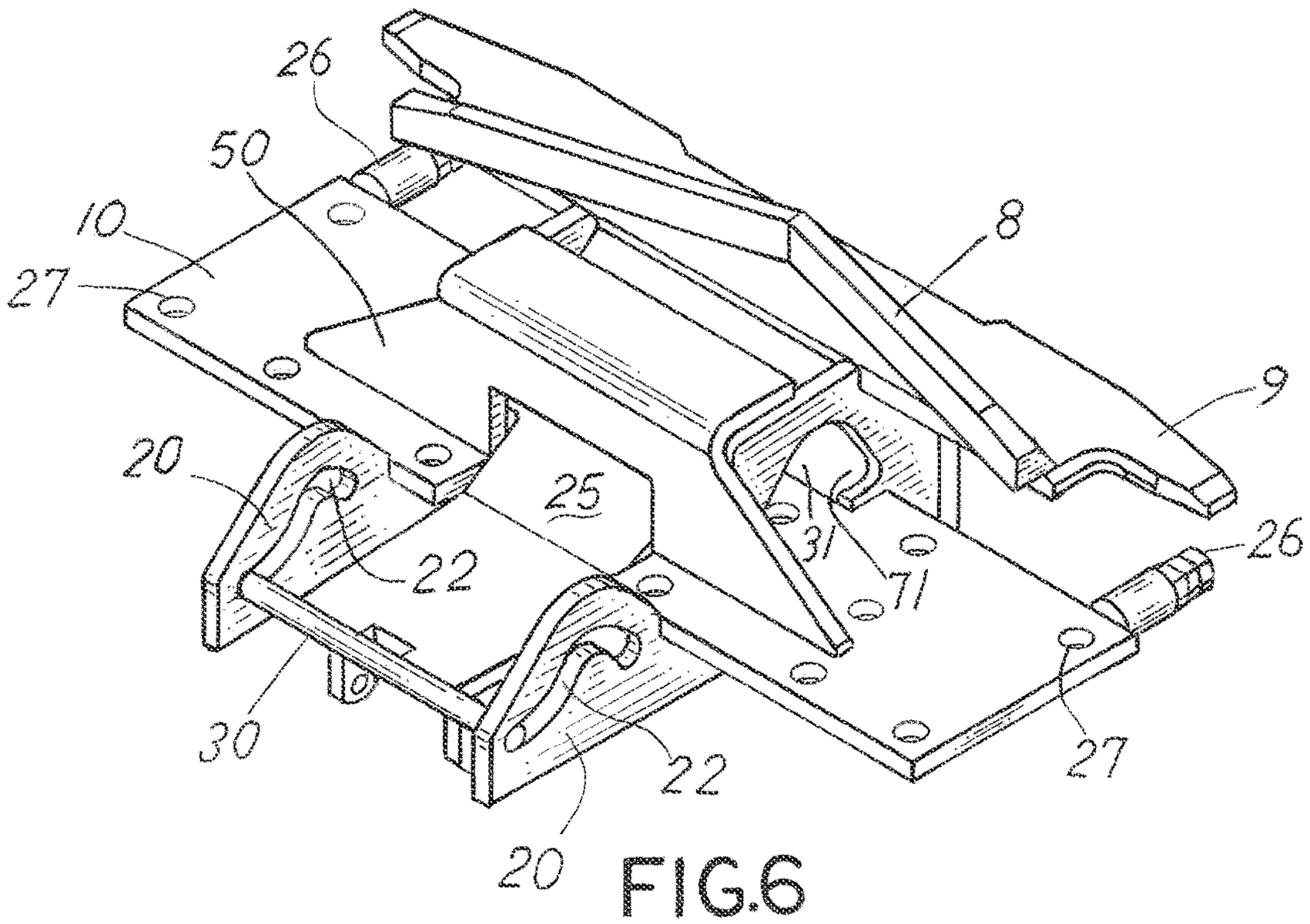
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FIG.6

FIG.9

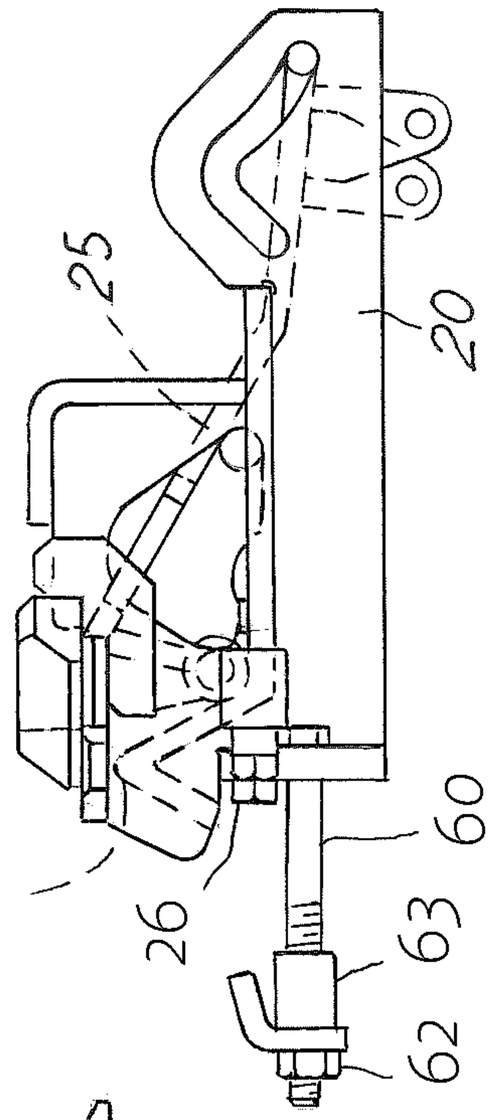
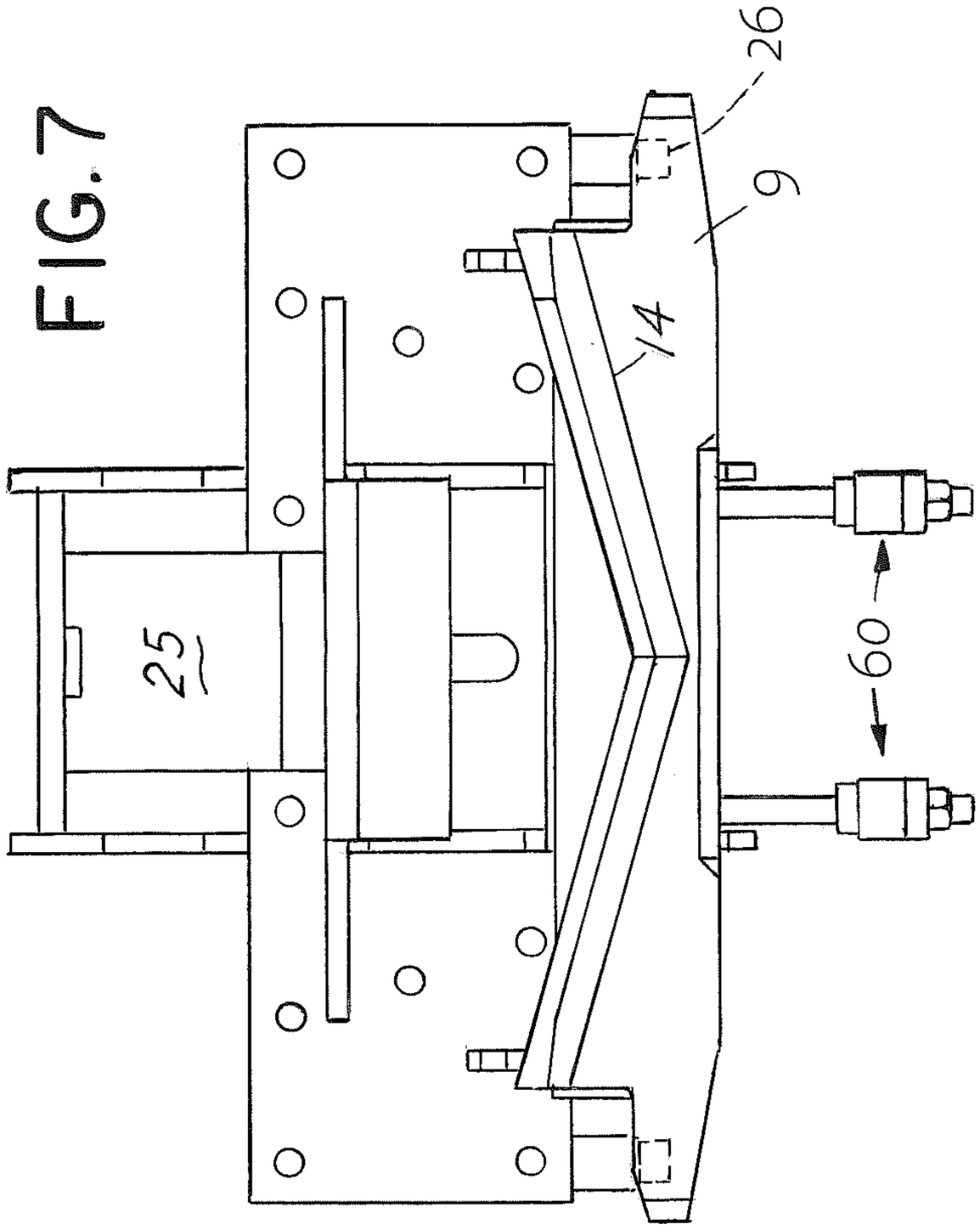


FIG.7



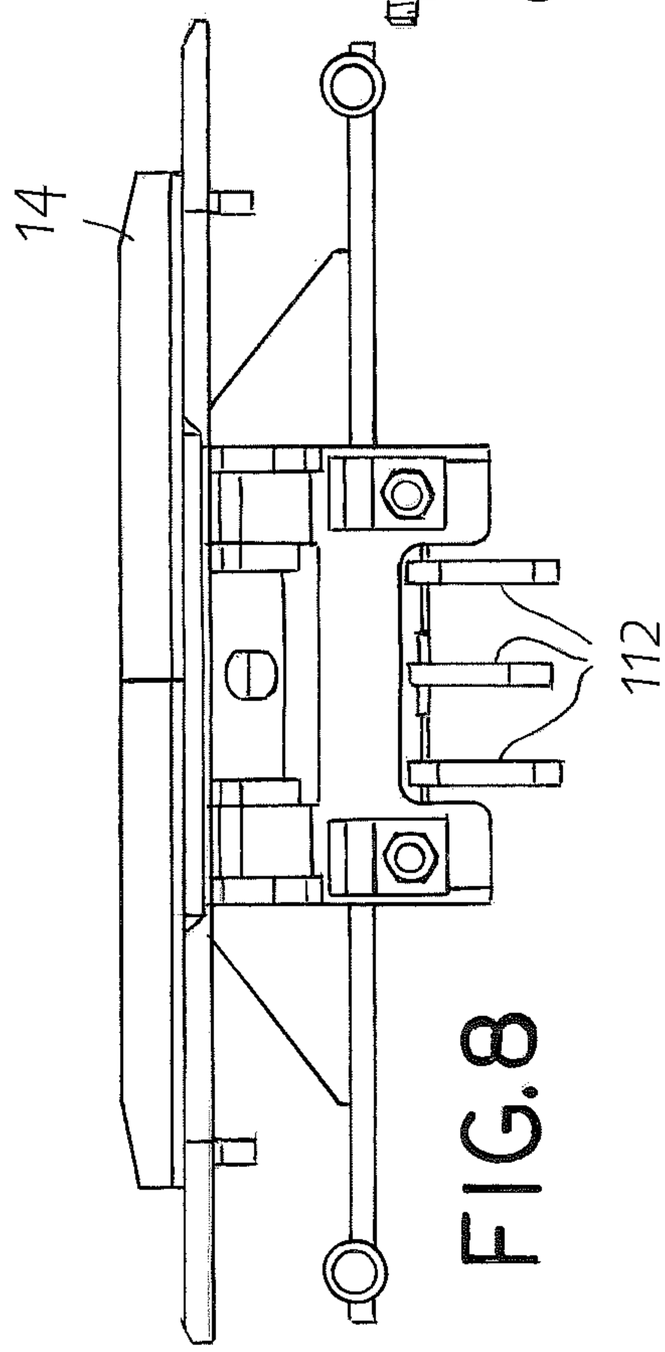


FIG.8

FIG. 10

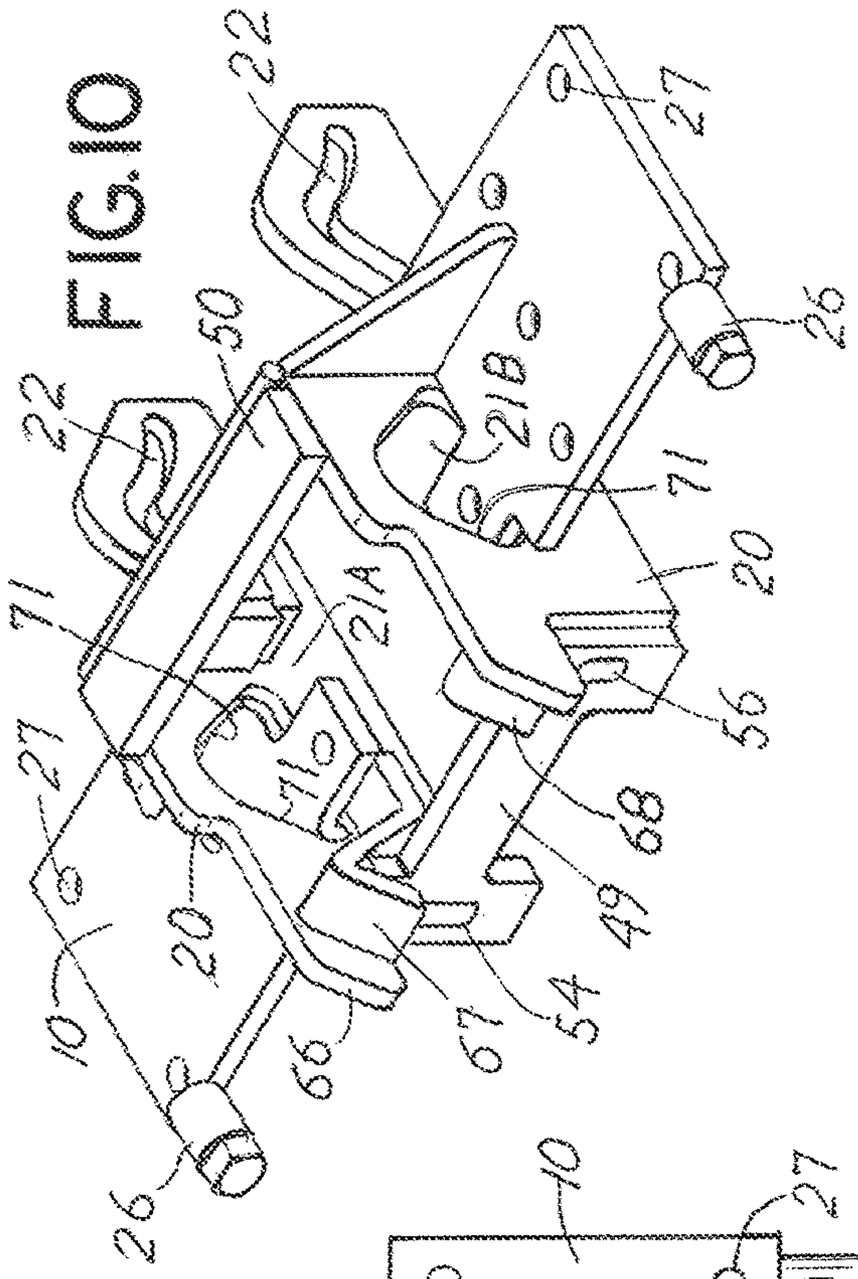


FIG. 11

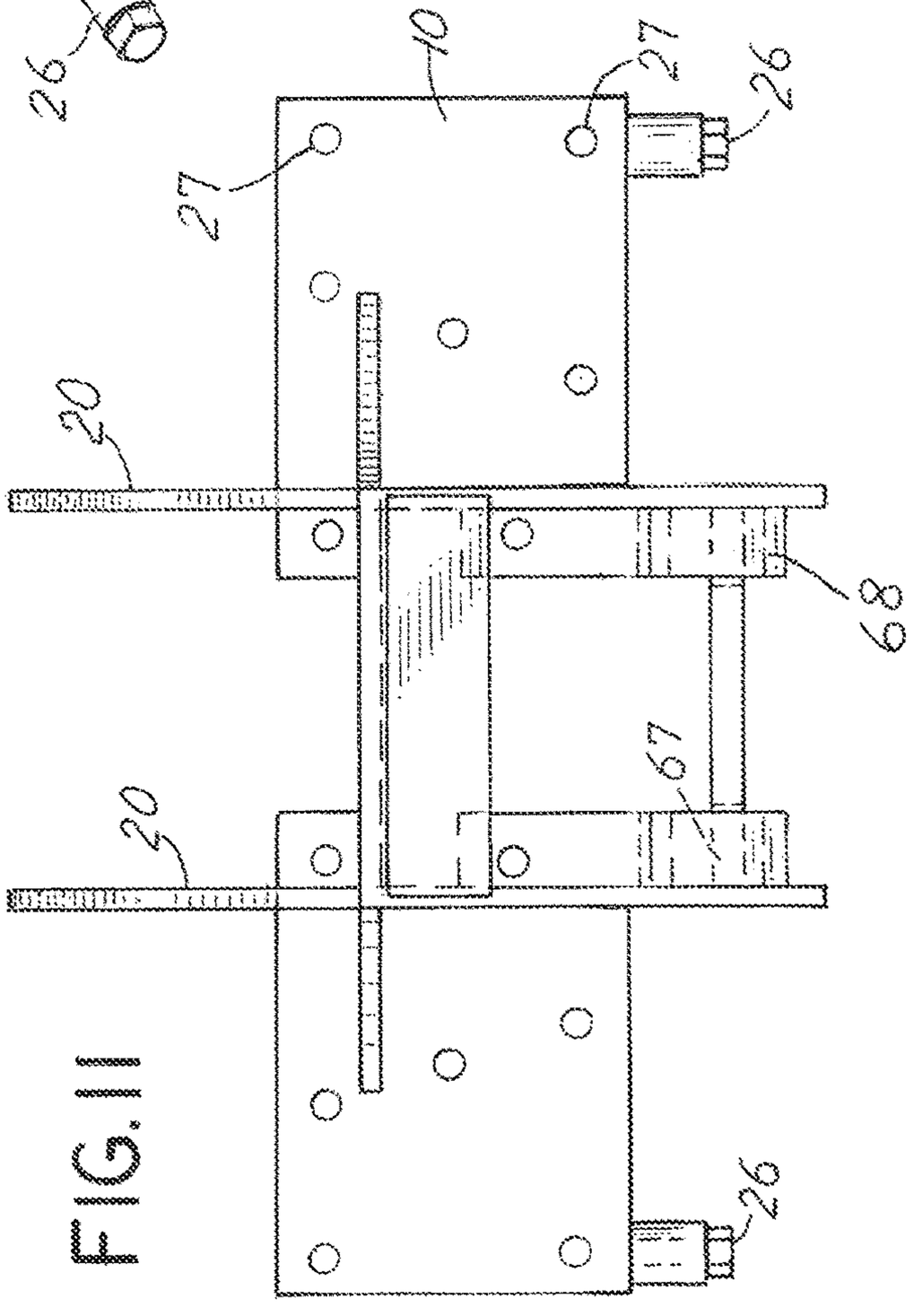


FIG. 3

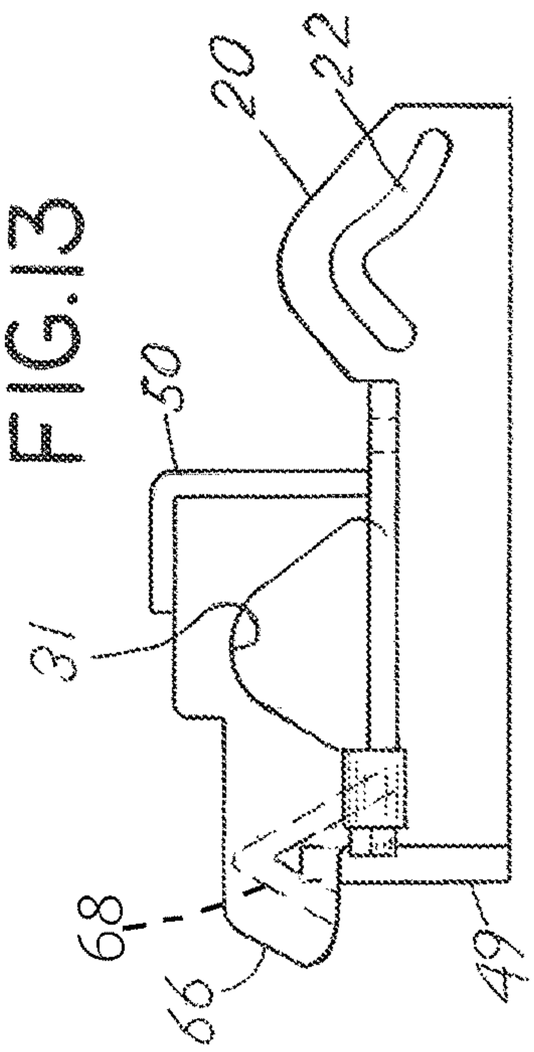
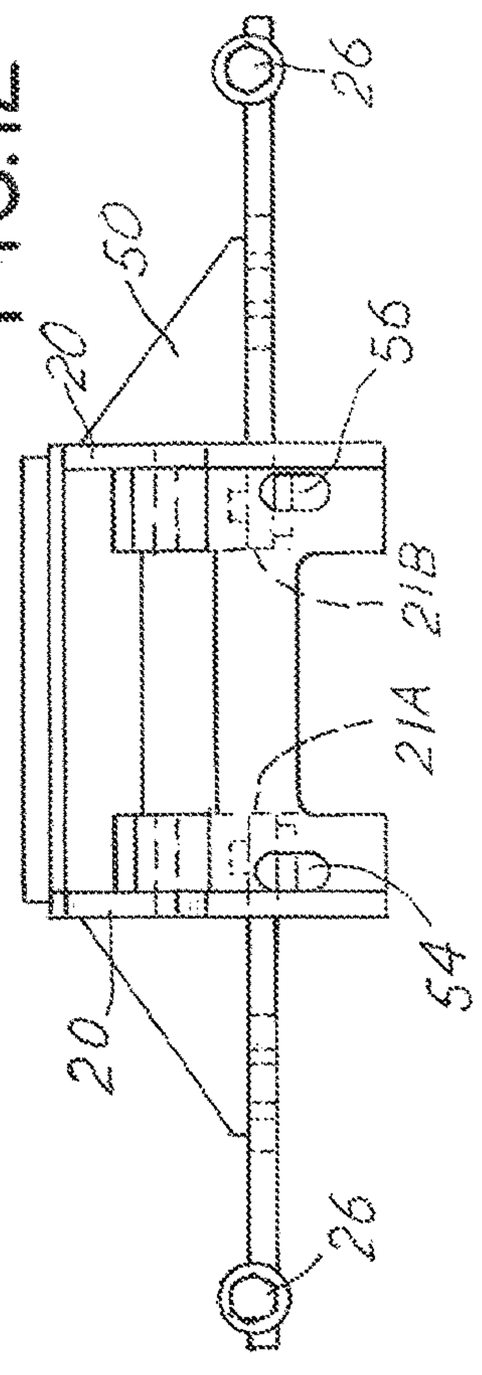


FIG. 2



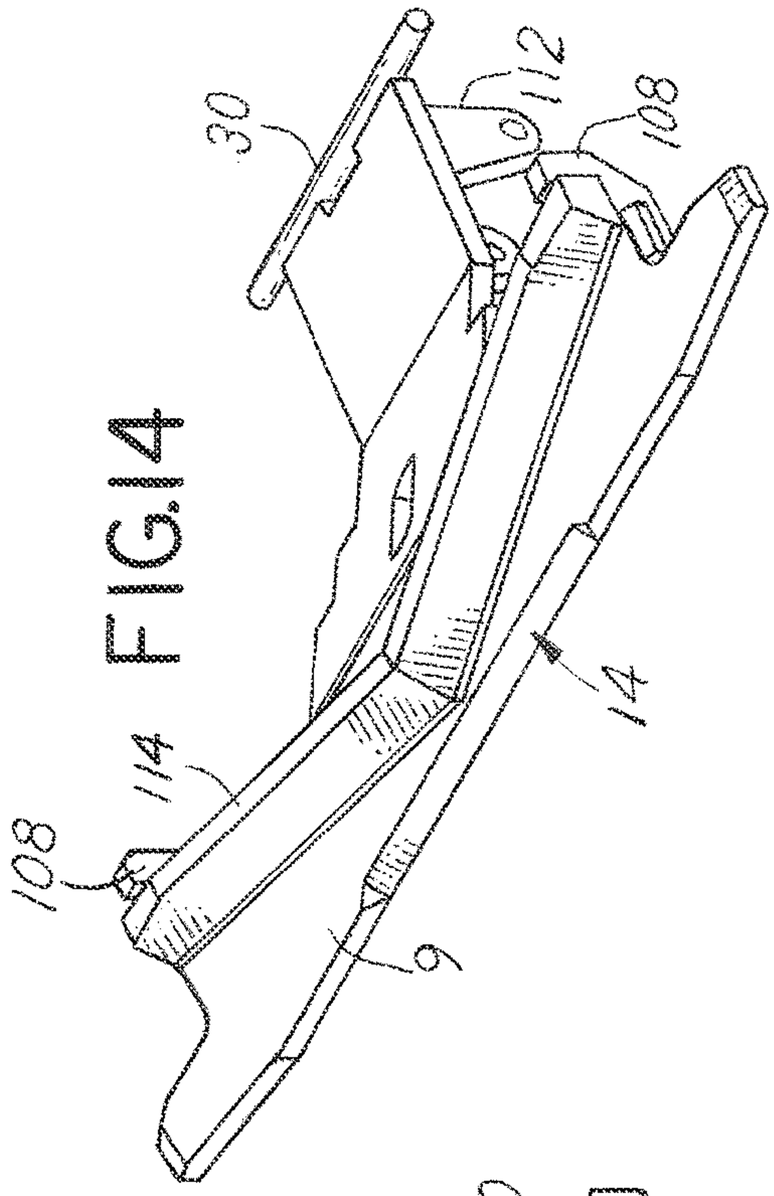


FIG. 14

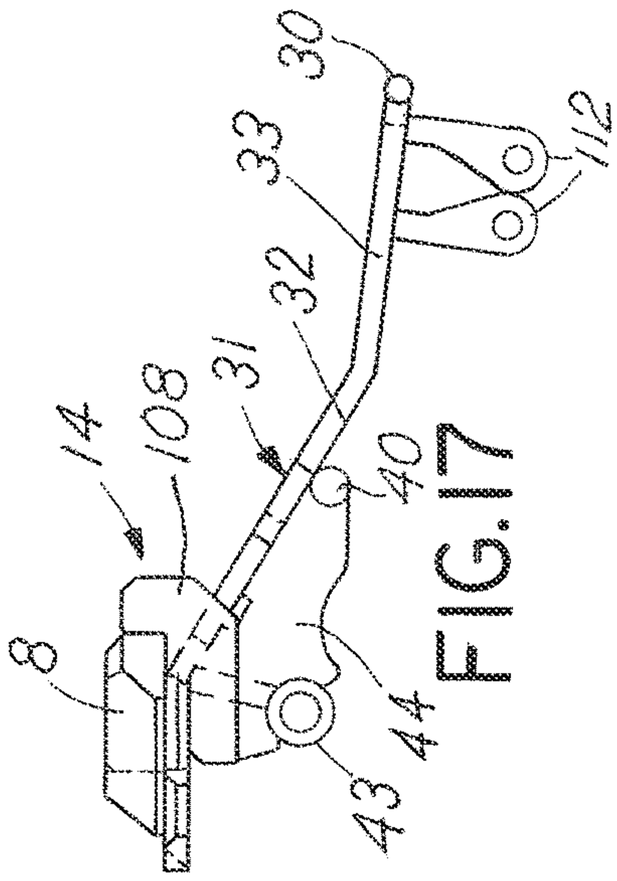


FIG. 17

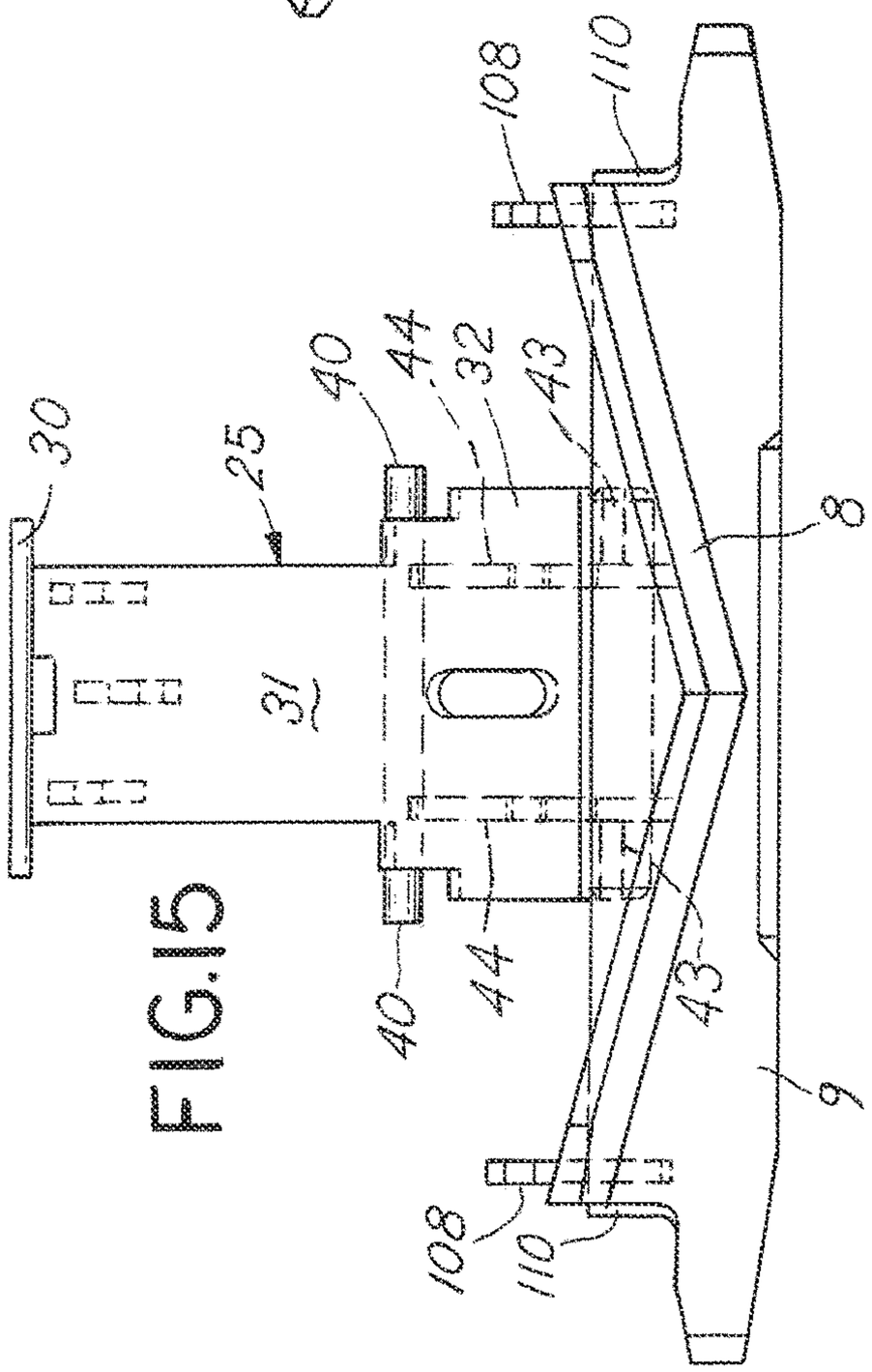


FIG. 15

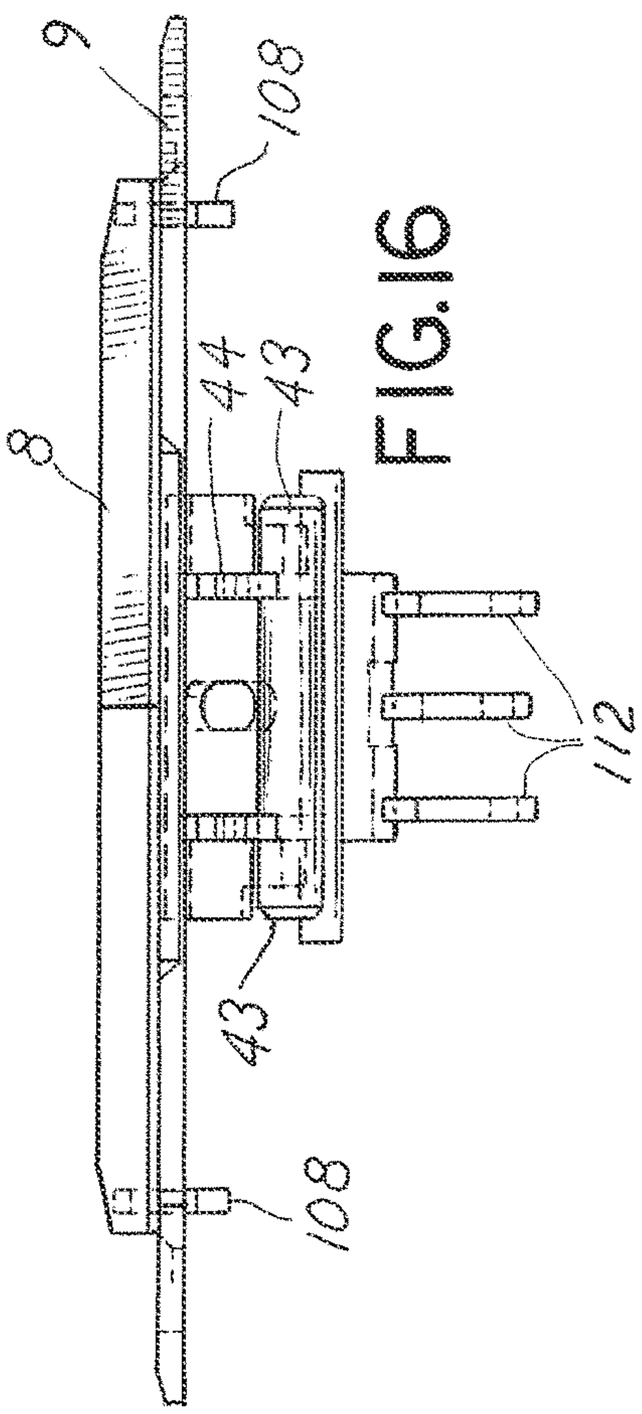


FIG. 16

FIG.18

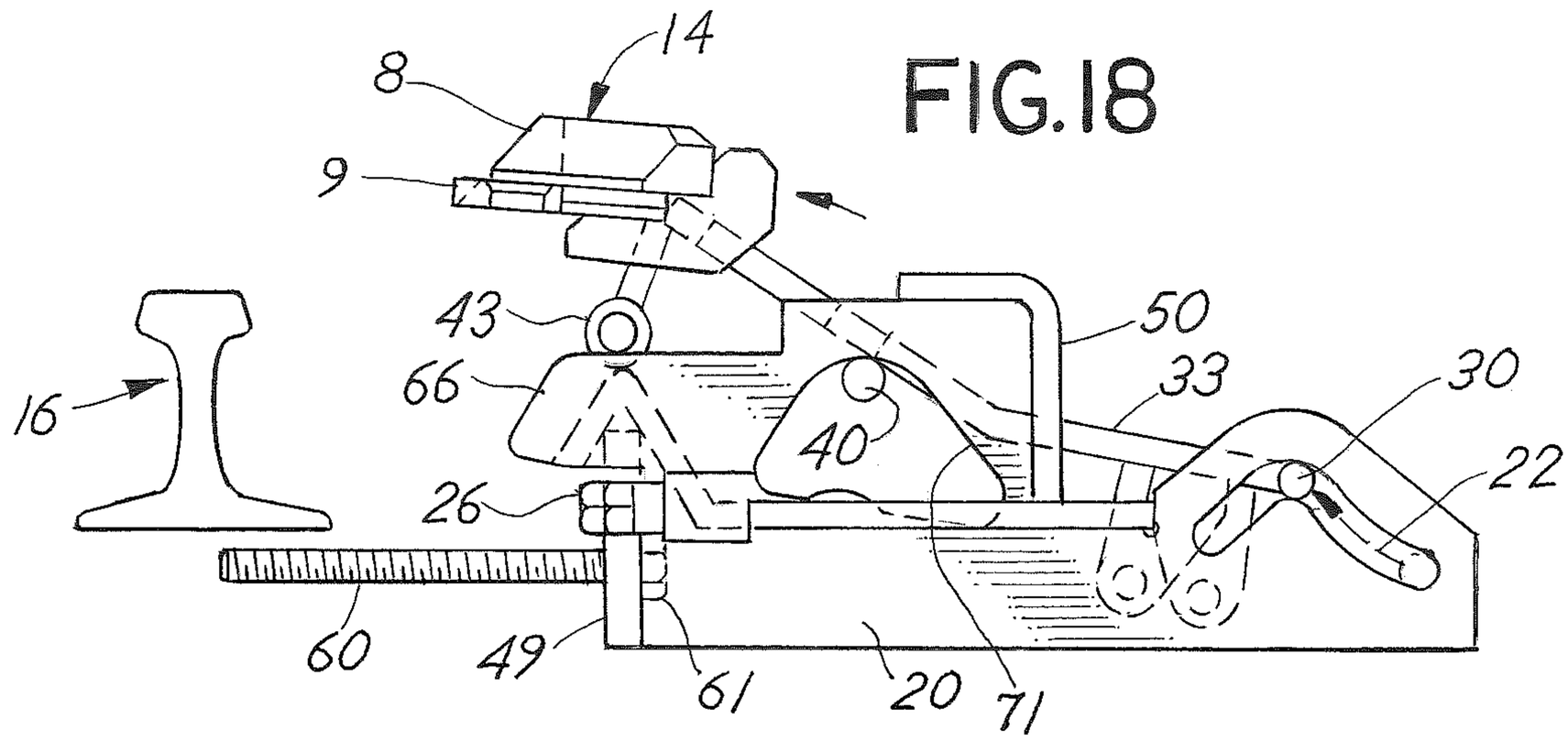


FIG.19

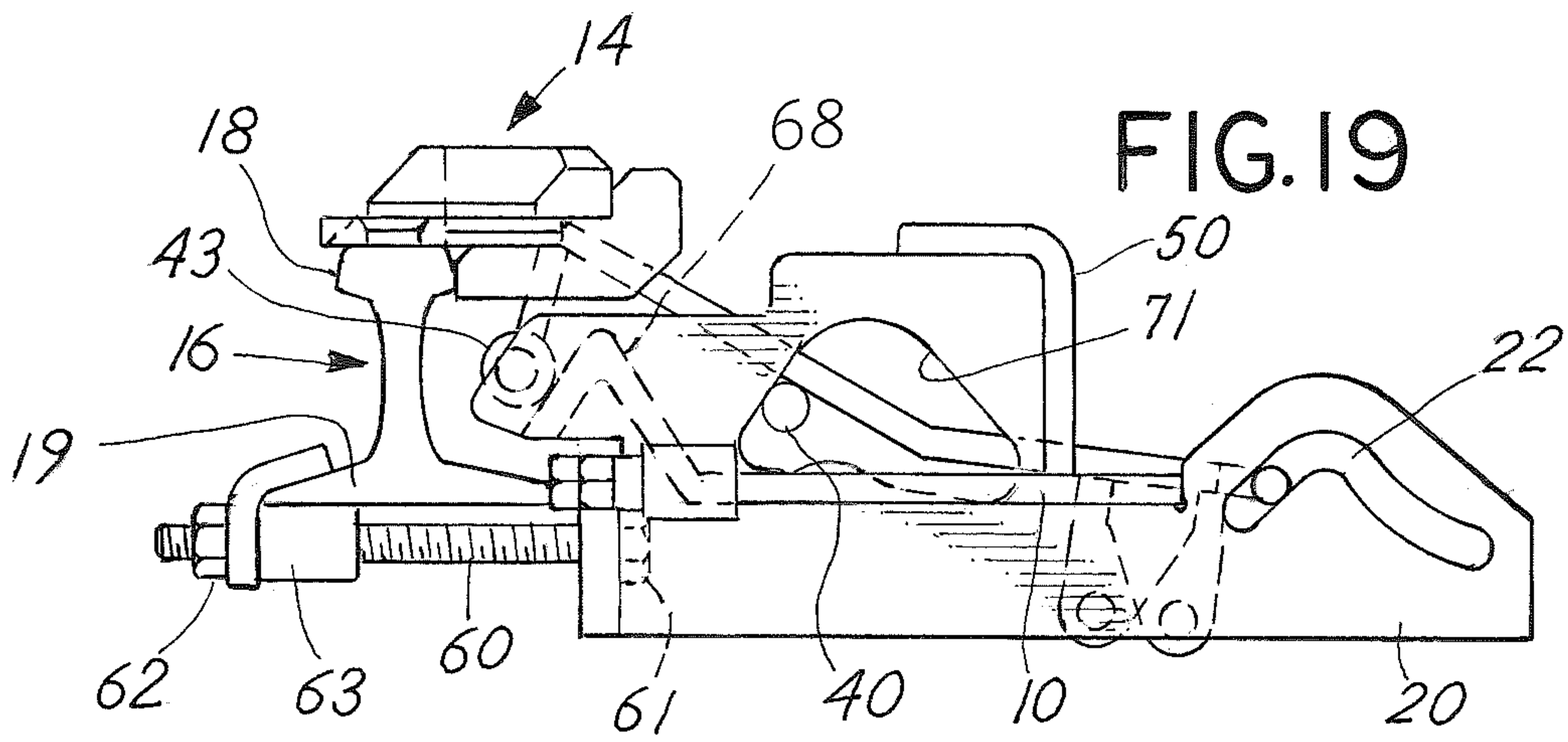
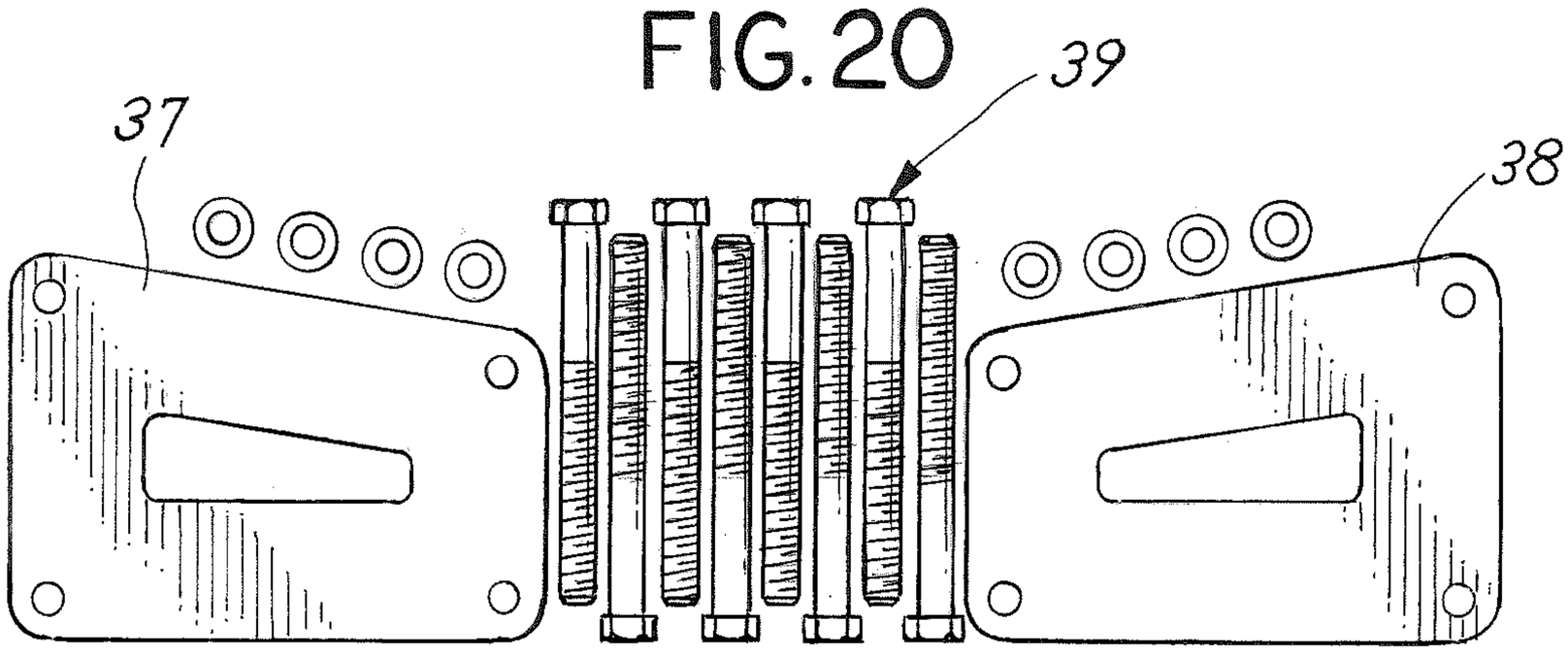


FIG.20



UNIVERSAL TRACK DERAILER ASSEMBLY

CROSS REFERENCE TO RELATED APPLICATION

This Application is a continuation of U.S. application Ser. No. 16/131,421 filed Sep. 14, 2018, which is a utility application claiming priority to provisional application Ser. No. 62/559,248 filed Sep. 15, 2017 entitled Universal Track Derailer Assembly.

BACKGROUND OF THE INVENTION

This invention relates to railway safety equipment, namely, a derailer assembly which is used for derailing rail vehicles including locomotives, railroad cars and the like which may be undesirably moving along railroad tracks at a relatively low speed.

There are many types of derailers or derails known in the railroad industry which have been used for many years. Certain types of derails are substantially permanently fixed to one rail of a pair of railroad track rails and various methods may be used to move the derail between an operative position and an inoperative position. Some derails are relatively light in weight and thus portable and some are heavy, bulky or otherwise not movable between operative and inoperative positions.

With the advent of railroad technology, the use of wooden ties to support steel rails has become less common. This change in technology has been inspired by the fact that wood ties may degrade over time requiring costly replacement and/or repair. Further, with the growth of rail technology, including the development of high speed rail transportation, new materials have been utilized and adapted for use as rail ties. For example, concrete and steel ties are now often utilized for the construction of railroad track systems.

Nonetheless, the necessity to provide a system for derailing rail cars has remained. Adapting derailing devices or derailers for use in combination with rails mounted on, or supported by concrete, steel and/or wood ties are thus an increasingly desired apparatus.

Heretofore, such an issue has not necessarily been addressed with respect as exemplified by various prior art patents such as the following:

Patents

PAT. NO.	ISSUE DATE	TITLE
6,105,906	Aug. 22, 2000	Lightweight and Ultra-Lightweight Portable Derails
7,549,611	Jun. 23, 2009	Hinged Derail with Assisted Manual Lifting and Method for Constructing
7,909,293	Mar. 22, 2011	Low Profile Derail
8,262,033	Sep. 11, 2012	Derail Assembly

Thus, there has developed over time a need for a more universal derailer system.

SUMMARY OF THE INVENTION

Briefly, the present invention comprises a derailer system and assembly which has universal application for use in combination with a rail track system employing various types of ties including wooden ties, concrete ties and steel ties. Thus, an object of the invention is to provide a single

derailer device or assembly that has universal application with respect to multiple types of rail track constructions.

Further, the derailer assembly employs a design feature which may be used with multiple rail designs. That is, rails typically have a similar cross sectional design or configuration. However, the dimensions of rails are not necessarily identical or standardized, though they typically have a horizontal base flange with a medial vertical riser intermediate the lateral edges of the flange and a bulbous head supported or positioned medially on the riser.

Consequently, known derailer assembles may not function appropriately in combination with many rail designs. The referenced prior art, therefore, is not universally functional.

Additionally, another problem has developed because of the variety of rail ties that are becoming more popular. That is, the well-known wooden ties are slowly being replaced by concrete or steel ties. Placement and mounting rails on wood ties typically involves use of spikes driven into the wood ties to fasten a base flange of the rail to the ties. Such technology utilizing spikes is not practical for attachment of rails to steel or concrete ties. Thus, the use of spikes to position and attach a derailer to steel or concrete ties may not be practical.

Thus, it is an object of the invention to provide a derailer assembly that may be easily mounted on wood, concrete and steel ties.

A further object is to provide a derailer assembly that may be utilized on multiple rail designs that is having distinct and different cross sectional profiles.

These and other objects are set forth in the descriptions which follow.

BRIEF DESCRIPTION OF THE DRAWING

In the detailed description which follows, reference will be made to the drawing comprised of the following figures:

FIG. **1** is a cross section view or profile of a typical rail;

FIG. **2** is a cross sectional view or profile of an alternate rail;

FIG. **3** is a perspective view of an embodiment of the derailer assembly of the invention positioned prior to engagement with and placement on a rail set on wood ties;

FIG. **4** is perspective view of the embodiment of the derailer assembly of FIG. **3** positioned on the top of a rail in a manner which would derail a wheel from the rail;

FIG. **5** is a perspective view of the embodiment of FIG. **3** prior to installation on ties as viewed toward the derailer guide plate located on a guide support that is designed to fit on the top of a rail;

FIG. **6** is a perspective view of the embodiment as depicted in FIG. **5**, viewed from the opposite or back side of the derailer assembly;

FIG. **7** is a top plan view derailer assembly of FIG. **3**;

FIG. **8** is a front or forward side elevation view of the derailer of FIG. **7**;

FIG. **9** is a side elevation of the derailer of FIG. **7** as viewed from the right hand side of FIG. **8**;

FIG. **10** is a perspective view of a box assembly component of the derailer assembly of FIGS. **3-9** and is one of two principal components of the derailer assembly;

FIG. **11** is a top plan view of the box assembly of FIG. **10**;

FIG. **12** is a front side elevation of the box assembly of FIG. **11**;

FIG. **13** is a side elevation of the box assembly of FIG. **11** as viewed toward the right side of FIG. **11**;

FIG. **14** is a perspective view of an arm having a derailer shoe along a front side pivot and slide plate connection member which couples the arm to the separate box assembly of FIGS. **10-13**;

FIG. **15** is a top plan view of the arm of FIG. **14**;

FIG. **16** is a front side elevation view of the arm of FIG. **15**;

FIG. **17** is a side elevation of FIG. **16** as viewed from the right hand side of FIG. **16**;

FIG. **18** is a side elevation view of the combination of the box assembly of FIGS. **10-13** and the arm of FIGS. **14-17** wherein the derailer shoe is elevated above the top elevation of a rail;

FIG. **19** is a side elevation of the combination of the box assembly of FIGS. **10-13** and the arm of FIGS. **14-17** depicting the shoe of the arm positioned on the top of a rail as a result of repositioning the arm assembly relative to the box assembly thereby lowering the arm depicted in FIG. **18** to position the shoe on the top of a rail;

FIG. **20** is a plan view of the contents of a kit of plates, nuts and bolts which are used in combination with the tie mounting plate of the box assembly of the derailer assembly to attach the mounting plate and thus the derailer assembly to spaced ties depicted, for example, in FIG. **4**.

DESCRIPTION OF EMBODIMENTS OF THE INVENTION

An object of the invention is to provide a universal derailer assembly which can be utilized with rails mounted on ties made of various materials and wherein the rails may vary in configuration and, more critically, in dimension. Thus, as background, FIGS. **1** and **2** illustrate cross-sectional views of typical distinct design rails **16**A and **16**B (generally "**16**") having distinct dimensional characteristics. The rails **16** are typically mounted on compatible rail attachment or hold down plates **17**, or rail flanges **19** which are, in turn, fastened by spikes **13** on cross ties **12** placed on a bed. The rails **16** typically have a generally similar cross sectional profile including a flange **19**, a vertical riser **24** extending vertically from the middle of the rail base flange **19** and a rail head **18** mounted on the riser **24**. The rails **16** typically are symmetrical with respect to a vertical, longitudinal medial plane of the riser **24**.

The subject matter of the invention is a derailer system, method and device which enables installation and positioning of the derailer assembly upon variously sized rails (FIGS. **1-2**) mounted on various types of cross ties. The derailer assembly includes a construction depicted in FIGS. **3-9**. The derailer assembly is designed to be attached to a flange **19** on the gage side of a rail to derail a wheel to the field side.

FIGS. **10-13** illustrate a first, of two principal components, of the derailer assembly; namely, a box assembly **15**. FIGS. **14-17** depict a second of the two components of the derailer assembly; namely, a slidable arm **25** component.

FIGS. **9**, **18** and **19** depict side elevation views of the derailer assembly and a slide sequence of the arm **25** relative to the box assembly **15** in order to position the derailer in an operative position on a rail **16**.

Referring, therefore, to FIGS. **10-13**, the box assembly parts and components are sized and positioned to be symmetrical relative to a medial plane vertical to a flat, generally rectangular mounting plate **10**. The mounting plate **10** is designed to function as a fixed support of the medially positioned box assembly **15** and arm **25** which in combination form the derailer construction. The box assembly **15**

includes two vertical spaced guide plates **20** attached to the horizontal mounting plate **10** which is designed to be placed and fixed on the top surface of spaced ties **12** with the spaced, vertical plates **20** located intermediate the opposed, lateral sides of the spaced ties **12**.

The mounting plate **10** further includes first and second spaced position adjustment lock bolts **26** projecting from the transverse front or forward edge of mounting plate **10**. The adjustment lock bolts **26** are for the purpose of providing a firm, fixed, adjustable horizontal spacing of the mounting plate **10** from a rail flange **19** on the gage side of a rail **16** when the mounting plate **10** is fixed or attached to spaced ties **12**.

Further, the lateral dimension or length of the mounting plate **10** is greater than the spacing of the lateral outside edges of the two spaced ties **12**. The mounting plate **10** also includes numerous openings **27** for receipt of fasteners or bolts to attach the mounting plate **10** to ties **12**. The openings **27** are located over the top surface of the ties **12** as well as on the lateral sides of ties **12**.

Referring further to FIGS. **10-13**, spaced guide lateral side parallel channel plates **20** are connected together by cross members; namely, front side cross member **49** and rear cross member **50** are welded and mounted on horizontal mounting plate **10**. The parallel spaced arm guide channel plates **20** are thus laterally, uniformly spaced in order to fit between two spaced ties **12** made of wood, steel or concrete.

Further, the upper front end of each guide plate **20** has a reduced height front section which is dimensioned to avoid interfering with a shoe **14** of arm **25** located on a rail as depicted in FIG. **19**.

Further, the rear surface of vertical cross brace **49** is welded to the front side surface of two spaced, horizontal, planar channel plates **21**A, **21**B. The channel plates **21**A, **21**B each abut and are welded to adjacent vertical guide plate **20** to form a first and a second, horizontal longitudinal bolt passage. The top of each channel plates **21**A, **21**B are also each attached, supported and bolted, respectively, to the underside of a projecting section of mounting plate **10** which extends through an arcuate opening **71** in spaced, vertical plates **20** (see FIG. **10**).

That is, because a flange **19** may have a particular lateral side to lateral side dimension, the derailer must be adjusted to properly center the derailer on the flange. In this regard, the mounting plate **10** includes laterally spaced lock bolts **26** on the forward lateral edge of mounting plate **10**. These lock bolts **26** may be adjusted to position mounting plate **10** appropriately to center the box **15** and thus the derailer on a flange **19**. When properly positioned, the clamp **63** may be positioned to complete locked engagement to the flange **19**. In that regard, since the mounting plate **10** is bolted to ties **12**, the mounting plate **10** is fixed in place by fastener screw bolts described hereinafter with respect to FIG. **20**.

In addition, each channel passage plate **21**A, **21**B includes an inverted V-shaped seat member **67**, **68** mounted on the top surface thereof as illustrated in FIG. **10**. Each seat member **67**, **68** is welded to an opposed inside surface of the guide plates **20** near front section **66** of guide plates **20**. Each seat member **67**, **68** has a width transverse to the guide plates **20** approximately equal to the transverse width of the channel passage plates **21**A, **21**B. Each seat member **67**, **68** includes a forwardly and upwardly pitched flat surface panel joined to a downwardly reversely pitched flat surface panel. The seat members **67**, **68** have substantially identical profiles transversely viewed toward the guide plates **20** and are aligned transversely. The seat members **67**, **68** are positioned at the forward end of the box assembly **15**. The box

assembly **15** is thus substantially symmetrical with respect to a medial vertical plane between the front and rear sides thereof.

The side wall vertical guide plates **20** of the box assembly **15** further include a generally semi-circular arc opening **71** intermediate the front and back side of each plate **20**. The arc opening **71** is shaped to engage and guide followers **40** mounted on a panel **31** of arm **25**. The followers **40** thus project transversely from arm **25** into the parallel arc openings **71** and engage the surface thereof as described further hereinafter to control vertical and horizontal sliding movement of arm **25**.

The channel guide plates **20** also include inversely shaped V guide slots **22** at the rear or back end of box assembly **15** for receipt of a transverse pivot rod **30** affixed by welding to the back side end of a panel **31** of arm **25**. Slots **22** participate in controlling horizontal sliding movement as well as vertical pitch of arm **25** and a shoe **14** attached at the front end of arm **25**.

Referring therefore to the second component part of the box assembly **15**, reference is directed to FIGS. **14** through **17** depicting the arm **25**. The arm **25** includes shoe **14** at the outer or front end. Shoe **14** is designed to fit against the top of a rail head **18**. The shoe **14** is comprised of V-shaped derailer wheel guide plate **8** and guide plate support plate **9**, which is, in turn, joined to the configured panel **31** having a first section **32**, joined to the shoe **14**, and connected second section **33** at the terminal or rear end of the panel **31**. The first section **32** and the second section **33** of the panel **31** are not coplanar but are joined by an obtuse angle bend on the top side therebetween. The second panel section **33** includes a transverse pivot rod **30** welded to the rear end of panel **31** extending transversely outwardly from opposite sides of the second panel section **33**. Pivot rod **30** is designed to fit slidably into the generally inverse V-shaped slot **22** in the spaced, channel plates **20**. The first panel section **32** of the panel **31** includes transverse the projecting followers **40** which fit into the arcuate opening **71** of channel plates **20** to engage and follow the arcuate surface defining the opening **71**.

The width of the front end of front, first panel member section **32** is lesser than the width of the remainder an adjacent portion of section **32** of the panel **31**. This enables thrust pins **43** to be positioned transversely projecting from vertical rib or side plates **44** welded to the underside of the outer transverse edges of the narrow section of panel plate section **32**. The thrust pins **43** are thus positioned to engage the inverted V-shaped seats mounted on mounting panels of channel plates **21**A, **21**B of guide plates **20**. Thus the inner end and outer end sections of plate **31** are a lesser width than the midsection of the first panel plate midsection **32** which spans the transverse space between channel plates **20**. This features insures consistent, smooth and controlled movement of the pivoting arm **25** when sliding in box **15** between plates **20**.

FIGS. **9**, **18** and **19** illustrate in greater detail the interaction between the pivot rod **30**, the rods or followers **40** and the thrust pins **43**. That is, FIG. **9** depicts the position of the arm **25** including the derailer guide **8** of the shoe **14** in a position not on a rail **16**. In this circumstance, the pivot rod **30** is positioned in the far-right-hand portion of the channel or slot **22** of plates **20**. The rod or follower **40** laterally projecting are engaged with and positioned in contact with the arcuate channel surface **71** of the plates **20**. The thrust pins **43**, which are coaxially attached to downwardly-depending side plates **44**, welded to the opposite sides of first panel section **32**, are positioned for sliding contact with the opposed or rear side of the seat member **62**.

FIG. **18** depicts forward parallel sliding movement of rod **30** of arm **25** in the slots **22**, as well as followers **40** with the surface of arcuate opening **71** and pins **43** with seat members **67**, **68**. The shoe **14** is raised to fit over the rail **16**. Thus, where the shoe **14** is in a substantially horizontal position as in FIG. **9**, it is raised and pitched upwardly when moved to the position of FIG. **18** wherein the rod **30**, followers **40** and pins **43** are at or near the zenith of slot **22**, arcuate opening **71** and seat members **67**, **68**, respectively.

The interacting pair of component guide elements (i) slot **22** and rod **30**, (ii) followers **40** and arcuate surface of arcuate opening **71**, (iii) pins and seats, thus are constructed, configured and designed to move in unison to control vertical elevation and pitch of the arm **25**. Additionally, the design of the panel **31** of the arm enable the assembly of the derailer by enabling assembly of the box **15** and arm **25**. That is, the arm without welding of the rod **30** to the outer end of the second section **33** of panel **31** enables placement of the arm panel between plates **20** by inserting the arm at an angle between the plates **20**. The arm **25** may then be properly oriented in the box **15**. The pivot rod **30** may then be welded to the rear end of the panel **31** upon placement in slot **22**.

To position the shoe **14** on the rail **16**, the arm assembly **25** is engaged and pushed slidably to the left from the position of FIG. **18** to the position in FIG. **19**. The transition between the arrangement of FIGS. **18** and **19** causes the shoe **14** to move vertically downwardly from an elevated position as the pivot rod **30** moves downwardly in the channel **22** and followers **40** and pins **43** are guided downward. The engagement and moving of the arm component **25** to the left as depicted in FIG. **19** position locks the arm **25** and shoe **14** in contact with a rail **16** as depicted. Thrust pins **43** may engage a forward retention surface on the vertical depending plate **44** to maintain the shoe **14** in the position of FIG. **19**. Thus, as depicted in the sequence of FIGS. **9**, **18** and **19** pivot rod **30** and followers **40** and pins **43** slide respectively in the guide channel slot **2**, arcuate surface of arcuate opening **71** and seat members **67**, **68** causing the arm **25** to pivot and also follow the contour of the semi-circular arcuate path surface of arcuate opening **71** and seat members **67**, **68**. Thrust pins **43** thus move upwardly from a zenith and downwardly so that the thrust pins become seated and simultaneously fixed in position. The shoe **14** is thus placed horizontally on the top of the rail **16** to effect a derailer operation.

The arm **25** includes various additional features. Referring to FIG. **14**, the guide plate **8** is reinforced by a flange or brace **114** positioned on the back side thereof. A flange chamfer **110** is located on the opposite ends of the guide support plate **9** (see FIG. **16**). Connecting links **112** are attached to the underside of the panel **31** at the rear end of the panel **31** for attachment of connection to a drive member (not shown) that effect sliding movement of the arm **25**.

Following is a summary of sequence of steps to operate the derailer of the embodiment of the invention:

Step 1—To install derailer, place mounting plate **10** on the spaced ties **12** at the gage side of rail **16** as depicted in FIG. **9**. Two 12" bolts **60** having bolt heads **61** are installed through openings **54**, **56** defined by brace **49** prior to Step 2.

Step 2—Slide derail shoe **14** on top of rail **16** (on-rail position) and slide derail until plates **44** and **108** are

tight against raid head. Then slide box assembly **15** toward rail until seats **67**, **68** and thrust pin **43** make contact.

Step 3—Adjust rail base lock bolts **26** against gage side rail base flange **19** and tighten associated jam nut to clamp box assembly **15** against rail flange.

Step 4—Slide clamps **63** on field side against rail flange **19** and tighten hex nut **62** on the end of the 12" bolts **60** opposite bold heads **61**.

Step 5—For mounting on wood ties, fasten mounting plate **10** to ties **12** with six screw spikes.

Alternate Step 5— When mounting on steel or concrete ties, use a clamp kit depicted in FIG. **20**. Clamp derailer to ties **12** using two mounting plates positioned underneath on the bottom surface of spaced ties and attach mounting bolts as described.

That is, utilizing spikes with a derailer may not be acceptable for attaching a plate **10** to a steel tie or a concrete tie due to the time, effort and potential damage with respect to the tie. That is, drilling passages in concrete or steel ties may be too costly and would adversely affect the structural integrity of the tie.

Thus, the assembly of the present invention further includes a kit depicted in FIG. **20** in combination with the derail assembly embodiment disclosed herein. The kit includes a pair of plates **37** and **38** in combination with an appropriate number of bolts **39** as discussed in steps outlined herein. Specifically, the plates **37** and **38** are positioned underneath ties and attached to the universal mounting plate **10** by bolts **39**. The rail bed for the ties is thus temporarily partially excavated. The derailer device is then positioned on the rail **16** in the same manner used with respect to wood ties. Thus, the kit depicted in FIG. **20** enables utilization of the derailer with wood ties, concrete ties, steel ties or ties made from other materials.

While an embodiment of the invention has been described, the invention is limited only by the following claims and equivalents.

What is claimed is:

1. A derail assembly for derailing a wheel of a railway vehicle movable along a rail, said rail having a substantially straight linear axis, a field side and a gage side, wherein said rail is securely and transversely mounted on a top of spaced ties, said ties each having an upright top side and a bottom side, said rail having an upper head and a lower flange interconnected by a central upright, unitary riser, said derail assembly comprising, in combination:

(a) a box assembly comprised of a generally horizontal, planar, mounting plate dimensioned to be positioned on and attached on the upright top side of two spaced ties, said mounting plate including first and second vertical parallel, laterally spaced guide plates spaced no greater than the spaced ties, said guide plates including in combination a pivot hinge connection element, said hinge connection element including pivot slots with a pivot axis generally parallel to said linear axis of a rail;

(b) an elongate shoe including an elongated rigid derail plate having an upper side and an underside, said underside capable of being in contact on an upper head of a rail, said elongated rigid derail plate further having a wheel entrance end and a wheel exit end being longitudinally spaced from said wheel entrance end, said derail plate further including an attached transversely projecting pivot panel arm with a pivot axis parallel to the box assembly pivot axis slots of the guide plates, said pivot axis of said projecting arm and said pivot axis of said slots of said guide plates are generally parallel, coextensive and simultaneously adjustable upon pivot panel of the pivoting arm of said shoe positioned in the slots between the parallel guide plates of the box assembly; and

(c) fasteners for attaching the mounting plate to spaced ties;

wherein each vertical guide plate has an upper front end with a reduced height front section that is dimensioned to avoid interfering with the shoe when the shoe is located on a rail.

2. The assembly of claim **1** further including a kit for attachment of the mounting plate to spaced ties, said kit including at least one supplemental plate for position against an underside of each of said ties and fasteners for connecting the supplemental plate to the mounting plate on said top side.

3. The assembly of claim **1** further including a seat member on said box assembly intermediate the front of said box assembly and the slot pivot axis and further including a thrust member projecting parallel to the pivot axis of said slot from one of said vertical guide plates and positioned to engage a surface of a seat member mounted on said box assembly.

4. The assembly of claim **1**, further comprising a vertical cross brace having a rear surface, and two spaced, horizontal, planar channel plates having a front side surface, wherein the rear surface of the vertical cross brace is welded to the front side surface of the channel plates, wherein the channel plates each abut and are welded to an adjacent vertical guide plate to form a first and a second, horizontal longitudinal passage, wherein a top of each channel plate are attached, supported and bolted, respectively, to an underside of a projecting section of the mounting plate which extends through an arcuate opening in the spaced, vertical guide plates.

5. The assembly of claim **1**, wherein the mounting plate includes laterally spaced lock bolts on a forward lateral edge of the mounting plate, wherein the lock bolts are configured to be adjusted to position the mounting plate approximately to center the box assembly and thus the derail assembly on a rail flange.

6. The assembly of claim **5**, further comprising a clamp to complete locked engagement of the assembly to a rail flange.

7. A derail assembly for derailing a wheel of a railway vehicle movable along a rail, said rail having a substantially straight linear axis, a field side and a gage side, wherein said rail is securely and transversely mounted on a top of spaced ties, said ties each having an upright top side and a bottom side, said rail having an upper head and a lower flange interconnected by a central upright, unitary riser, said derail assembly comprising, in combination:

(a) a box assembly, said box assembly including:

(i) a mounting plate dimensioned to be positioned on and attached onto the upright top side of two spaced ties, said mounting plate comprising a planar plate generally horizontal member having a lateral dimension greater than the spacing of said spaced ties,

(ii) first and second laterally spaced, vertical guide plates mounted on said mounting plate intermediate lateral sides of said mounting plate for positioning to a gage side of a rail, said laterally spaced, vertical guide plates positioned no greater than spacing the ties, said first and second guide plates having a substantially identical profile and including one or more follower openings through the guide plates;

(b) an elongate separate shoe including an elongated rigid derail plate, an upper side and an underside, said upper side positioned for and capable of contact with a rail gage side;

said elongated rigid derail plate further including a rail wheel entrance end and a wheel exit end;

said shoe further including an attached, transversely projecting pivot panel arm having a pivot axis, said arm including axially, transversely projecting pivot members for engagement with and following follower openings of said first and second guide plates to engage or disengage the derail plate upon movement of the arm transversely toward or from the gage side of the said rail; and

(c) fasteners for attaching the mounting plate on spaced ties;

wherein each vertical guide plate has an upper front end with a reduced height front section that is dimensioned to avoid interfering with the shoe when the shoe is located on a rail.

8. The assembly of claim **7**, further including a seat member on said box assembly intermediate the front of said box assembly and further including a thrust member projecting parallel to the pivot axis from one of said vertical guide plates and positioned to engage a surface of a seat member mounted on said mounting plate.

9. The assembly of claim **7**, wherein said derail plate comprises an underside section configured to be positioned in contact with a riser and underside of a rail and the upper side is positioned to engage the head of said rail.

10. The assembly of claim **7**, further comprising a vertical cross brace having a rear surface, and two spaced, horizontal, planar channel plates having a front side surface, wherein the rear surface of the vertical cross brace is welded to the front side surface of the channel plates, wherein the channel plates each abut and are welded to an adjacent vertical guide plate to form a first and a second, horizontal longitudinal passage, wherein a top of each channel plate are attached, supported and bolted, respectively, to an underside of a projecting section of the mounting plate which extends through an arcuate opening in the spaced, vertical guide plates.

11. The assembly of claim **7**, wherein the mounting plate includes laterally spaced lock bolts on a forward lateral edge of the mounting plate, wherein the lock bolts are configured to be adjusted to position the mounting plate approximately to center the box assembly and thus the derail assembly on a rail flange.

12. The assembly of claim **11**, further comprising a clamp to complete locked engagement of the assembly to a rail flange.

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